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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,487	04/24/2001	Po-An Sung	Sung 2 (58650)	4522
30593	7590	09/15/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			WANG, TED M	
P.O. BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	

2634

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/841,487	Applicant(s) SUNG, PO-AN	
	Examiner Ted M. Wang	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-15 and 19-25 is/are rejected.  
7) ☒ Claim(s) 16-18 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 07/13/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, filed on 07/05/2005, with respect to claims 1-22 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicants' arguments but firmly believes that the cited reference to reasonably and properly meet the claimed limitations.
2. Applicant's arguments with respect to claims 23-25 have been considered but are moot in view of the new ground(s) of rejection.

#### **Independent Claims 1-15 and 19**

- (1) *Applicants' argument* – "That reference teaches a different strategy and technique than what is claimed. In the Nakano reference, the frequency offset estimation section estimates the amount of a carrier frequency offset which can be employed by the pilot signals and determines the width (or the time constant) of a passing area of the filtered section 202. The coherent detecting section 205 corrects the phase shift of the despread data signal using pilot signals passed through the filtering section 202. That is not the same as estimating a Doppler change in frequency using a pilot signal and using that estimated Doppler change in frequency for removing the Doppler change in frequency from a dedicated physical channel. In other word, the Nanano reference utilizes a frequency offset estimate to determine a filter time constant and then filters a pilot channel. The filtered pilot channel is then used by the coherent detecting

section 405. The coherent detecting section does not use an estimate of the Doppler change in frequency. Therefore, there is no anticipation." as recited *Examiner's response* -- In response to applicant's argument as described in the above paragraph, the Nanano reference utilizes a Doppler shift estimating section 402 to estimate the Doppler shift amount of each multiple wave from the despread pilot signals. Doppler shift component filtering section 403 allows only a specified frequency area of the despread pilot signals to pass on the basis of the estimation result of the Doppler shift estimating section 402. Data despreding section 404 despreads receiving signals, using spread codes for data channel and detects despread data signals. Coherent detecting section 405 corrects the phase shift of the despread data signals, using the pilot signals passed through the Doppler shift component filtering section 403. The Nakano patent teaches the detecting section using an estimate of the Doppler change in frequency indirectly. Thus, for the explanation addressed in the above paragraph, the rejection under 35 U.S.C. 102(b) with Nakano's reference is adequate. Thus, for the explanation addressed in the above paragraph, the rejection under 35 U.S.C. 102(b) with Nakanos' reference is adequate.

Claims 20-22

(2) *Applicants' argument* –

a). "Applicant respectfully traverses the rejection under 35 U.S.C.103 based upon the proposed combination of the Nakano reference and the Simon et al.

reference. The proposed combination cannot be made. There would be no benefit to adding the teaching of Simon, et al. to the teachings of the Nakano reference because the Nakano reference uses a different technique and absent Applicant's own disclosure, there is no possible suggestion for incorporating the teachings of Simom et al. into the Nakano reference according to the Examiner's proposal.

b). Moreover, even if the combination could be made, the result is not the same as what Applicant claims. As noted above, Nakano does not use an estimated Doppler change in frequency for removing a Doppler change in frequency from a dedicated physical channel. Instead, Nakano uses a filtered pilot channel in a coherent detection section in frequency as claimed. This is not the same as using an estimated Doppler change in frequency as claimed.

*Examiner's response –*

(I). With regard to a), In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, Nakano, cited by the instant applicant, discloses a wireless communication apparatus and wireless communication method receiving within a communications receiver a spread spectrum communications signal (Fig.1 elements 6-8) having a dedicated physical channel (Fig.6 elements 404 and 405) and common pilot channel (Fig.6 elements 401-403 and 405); estimating the Doppler change in frequency using the common pilot channel (Fig.6 elements 402 and 403); and removing the Doppler change in frequency within the dedicated physical channel using the estimated Doppler change in frequency (Fig.6 element 405 and page 7 line 36 – page 8 line 25), where it is assumed that the spread is carried out by quadrature phase shift keying system (QPSK system) (paragraph 20).

Simon et al. teaches a Doppler-corrected differential detection circuit in a communication system operating with a multiple differential phase-shift-keyed format ("MDPSK") creates an adverse phase shift in an incoming signal. Thus, both of Nakano and Simon are related to the PSK system. Clearly, the teaching of Simon with the Doppler-corrected differential detection circuit can be implemented into Nakano's Doppler shifter estimating section to remove the Doppler effect so that the receiver quality is improved. Thus, for the explanation addressed in the above paragraph, the rejection under 35 U.S.C. 103(a) with Nakano and Simons' references are adequate.

(II.) With regard b), the explanation addressed in the above paragraph for claims 1-15 and 19.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1-15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakano (EP 0,898,379 A2).

- With regard claim 1, Nakano, cited by the instant applicant, discloses a wireless communication apparatus and wireless communication method receiving within a communications receiver a spread spectrum communications signal (Fig.1 elements 6-8) having a dedicated physical channel (Fig.6 elements 404 and 405) and common pilot channel (Fig.6 elements 401-403 and 405); estimating the Doppler change in frequency using the common pilot channel (Fig.6 elements 402 and 403); and removing the Doppler change in frequency within the dedicated physical channel using the estimated Doppler change in frequency (Fig.6 element 405 and page 7 line 36 – page 8 line 25).
- With regard claim 2, Nakano further discloses the limitation of receiving the spread spectrum communications signal within a rake receiver (Fig.1 elements 5-8 and Fig.6 elements 401-405, page 2 lines 25-57, page 4 lines 3-7, and page 7 line 36 – page 8 line 25).
- With regard claim 3, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

- With regard claim 4, Nakano further discloses the limitation of multiplying a channelization code into respective In-phase (I) and Quadrature (Q) channels, summing over a symbol period, and sampling to obtain respective I and Q sampled values (page 3 lines 13-55, page 5 lines 19-35, page 6 lines 2-28, page 6 line 54 – page 7 line 32, and page 7 line 58 – page 8 line 25).
- With regard claim 5, Nakano further discloses the limitation of phase shifting and taking an arctangent of I and Q sampled values to estimate the Doppler frequency shift (page 7 lines 1-32).
- With regard claim 6, Nakano further discloses the limitation of estimating sine and cosine values of the estimated Doppler frequency shift to be multiplied within the dedicated physical channel (page 3 lines 13-55, page 5 lines 19-35, page 6 lines 2-28, page 6 line 54 – page 7 line 32, and page 7 line 58 – page 8 line 25).
- With regard claim 7, Nakano further discloses the limitation of splitting the dedicated physical channel into I and Q data channels that receive an estimated Doppler change in frequency (page 7 line 36 – page 8 line 25).
- With regard claim 8, Nakano further discloses the limitation of estimating the Doppler change in frequency within respective I and Q Doppler estimation channels (page 7 line 36 – page 8 line 25).
- With regard claim 9, all limitation is contained in claims 2 and 6. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 10, all limitation is contained in claims 9 and 4. The explanation of all the limitation is already addressed in the above paragraph.

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- With regard claim 11, all limitation is contained in claims 9 and 5. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 12, all limitation is contained in claims 9 and 6. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 13, all limitation is contained in claims 9 and 7. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 14, all limitation is contained in claims 9 and 8. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 15, which is a receiver claim related to claim 9, all limitation is contained in claims 9. The explanation of all the limitation is already addressed in the above paragraph.
- With regard claim 19, which is a receiver claim related to claim 4, all limitation is contained in claims 4. The explanation of all the limitation is already addressed in the above paragraph.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (EP 0,898,379 A2) in view of Simon et al. (US 5,007,068).

- With regard claim 20, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit.

However, Simon et al. teaches each I and Q Doppler estimation channel comprises an integrator (Fig.4 elements 412 and 413 LPFs, which inherently have a integrator function) and sample (Fig.4 elements 53, 54, 81, and 82) and delay circuit (Fig.4 elements 31, 32, 93, and 94).

It is desirable that each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit to remove the Doppler effect (column 2 lines 42-52) so that the receiver performance is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel comprises an integrator and sample and delay circuit, into Nakano's Doppler estimation circuit to remove the Doppler effect so that the receiver performance is improved.

- With regard claim 21, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel further comprises a phase shifter.

However, Simon et al. teaches each I and Q Doppler estimation channel further comprises a shifter (Fig.4 elements 110 and 115).

It is desirable that each I and Q Doppler estimation channel further comprises a phase shifter to improve the Doppler estimation operation (column 7 lines 55-59) so that the receiver performance is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel further comprises a shifter, into Nakano's Doppler estimation circuit to improve the Doppler estimation operation so that the receiver performance is improved.

- With regard claim 22, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching that each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel.

However, Simon et al. teaches each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel (Fig.4 elements 111 and 116).

It is desirable that each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the respective other I or Q Doppler estimation channel to remove the Doppler effect (column 6 lines 39-67) so that the receiver performance is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the receiver as taught by Simon et al. in which, each I and Q Doppler estimation channel further comprises a multiplier for receiving a delay signal from the

respective other I or Q Doppler estimation channel, into Nakano's Doppler estimation circuit to remove the Doppler effect so that the receiver performance is improved.

- With regard claims 23-25, which are related method and system claims, Nakano discloses all of the subject matter as described in the above paragraph except for specifically teaching using differential detection for estimating the Doppler change in frequency.

However, Simon et al. teaches using differential detection for estimating the Doppler change in frequency (Fig.2 and column 3 line 59 – column 4 line 33).

It is desirable using differential detection for estimating the Doppler change in frequency. The reason for this is that the Doppler corrected differential detection system in a communication system operating with a multiple differential phase-shift-keyed format ("MDPSK") creates an adverse phase shift in an incoming signal. An open loop frequency estimation is derived from a Doppler-contaminated incoming signal. Based upon the recognition that, whereas the change in phase of the received signal over a full symbol contains both the differentially encoded data and the Doppler induced phase shift, the same change in phase over half a symbol (within a given symbol interval) contains only the Doppler induced phase shift, and the Doppler effect can be estimated and removed from the incoming signal (column 2 lines 42-52) so that the receiver performance is improved. Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the

receiver as taught by Simon et al. in which, using differential detection for estimating the Doppler change in frequency, into Nakano's Doppler estimation circuit as to remove the Doppler effect so that the receiver performance is improved.

***Allowable Subject Matter***

5. Claims 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

4. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2634

Ted M. Wang



**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINE**  
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